ORDER NO. SD82032119C8

Service Manual

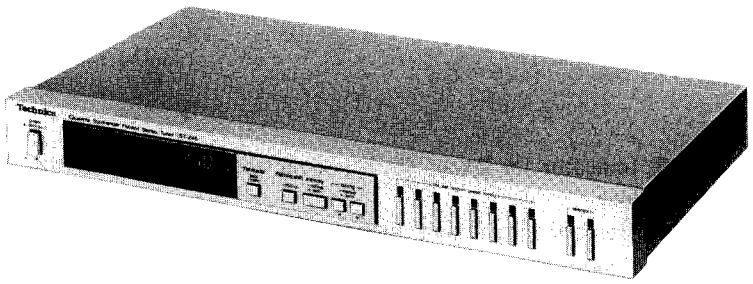
QUARTZ Synthesizer FM/AM Stereo Tuner

ST-Z45

[EX], [EH],
[XA], [XL]

ST-Z45(K)

[EX], [EH]



* The cabinet and front panel are available in black color and silver type.
* The black type model is provided with (K) in the Service Manual.

Areas

* [EX] is available in Switzerland and Scandinavia.
* [EH] is available in Holland.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.

Specifications (Specifications are subject to change without notice for further improvement.)

(DIN 45 500)

■ FM TUNER SECTION

Frequency range	87.50~108.00 MHz
Sensitivity	2.0 μV (IHF, usable)
S/N 30 dB	2.0 μV (300Ω), 1.0 μV (75Ω)
S/N 26 dB	1.8 μV (300Ω), 0.9 μV (75Ω)
S/N 20 dB	1.6 μV (300Ω), 0.8 μV (75Ω)
IHF 46 dB stereo quieting sensitivity	22.0 μV/75Ω
Total harmonic distortion	
MONO	0.08%
STEREO	0.15%
S/N	
MONO	70 dB (78 dB, IHF)
STEREO	65 dB (73 dB, IHF)
Frequency response	20 Hz~15 kHz, +0.5 dB~ −1.5 dB
Alternate channel selectivity	
normal ±400 kHz	65 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	55 dB
IF rejection at 98 MHz	80 dB
Spurious response rejection at 98 MHz	80 dB
AM suppression	55 dB
Stereo separation	
1 kHz	40 dB
10 kHz	30 dB
Carrier leak	
19 kHz	30 dB (−35 dB, IHF)
38 kHz	−45 dB (−50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.0 dB
Limiting point	1.9 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	300Ω (balanced)
	75Ω (unbalanced)

■ AM TUNER SECTION

Frequency range	522~1611 kHz (9 kHz-step)
	530~1620 kHz (10 kHz-step)
Sensitivity (S/N 20 dB)	20 μV, 300 μV/m
Selectivity (±9 kHz)	55 dB
Image rejection at 999 kHz	40 dB
IF rejection at 999 kHz	65 dB

■ GENERAL

Output voltage	0.6V
Power consumption	8W
Power supply	AC 50 Hz/60 Hz, 220V
	(For continental Europe)
	AC 50 Hz/60 Hz, 240V
	(For Australia)
	AC 50 Hz/60 Hz, 110V/120V/220V/240V
	(For others)
Dimensions (W×H×D)	430 × 53 × 245 mm
	(16-15/16" × 2-3/32" × 9-21/32")
Weight	2.4 kg
	(5.3 lb.)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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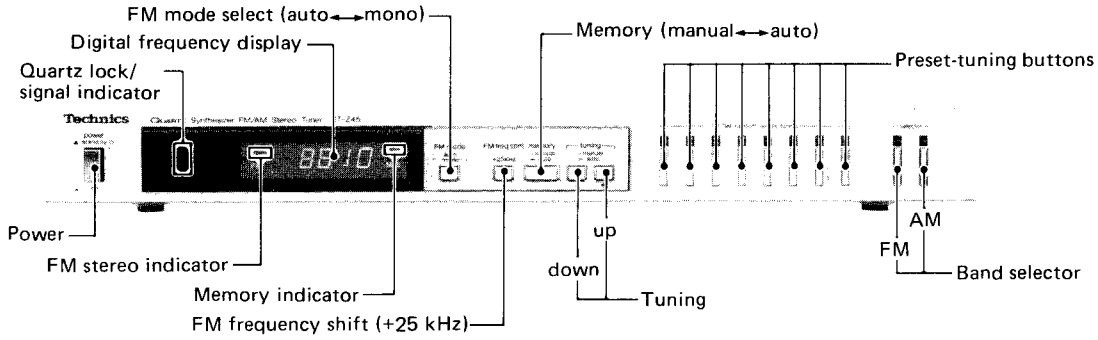
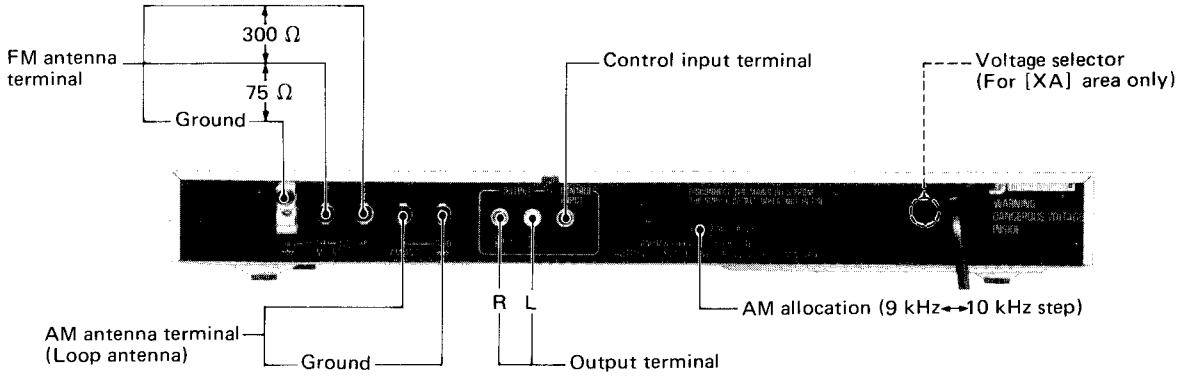
■ FEATURES

1. FM/AM 16-station random access memory.
2. Auto scan/auto function.
3. Indicator for 2-way display of signal strength and quartz lock.
4. Memory circuit and memory back-up liquid electrolyte double layer capacitor.

■ LOCATION OF CONTROLS





- The power supply for this unit varies depending upon the areas. Also, the parts used for power supply are different. So, refer to the circuit diagram and the replacement parts list.

*220V (50/60 Hz) for Continental Europe.
*240V (50/60 Hz) for Australia.
*110V/120V/220V/240V (50/60 Hz) for other areas.
—[XA areas] for other areas is provided with voltage selector.

ORDER NO. SD82032121C8-A

FRANÇAIS

Synthesizer FM/AM Stereo Tuner ST-Z45/ST-Z45(K)

- This booklet contains the specifications and adjusting procedures for ST-Z45, written in French and Spanish.
- File this manual together with the ST-Z45 service manual (Order No. SD82032121C8).

FRANÇAIS

■ CARACTERISTIQUES (DIN 45 500) (Sujet à changement sans préaris.)

■ SECTION SYNTONISATEUR FM

Gamme de fréquence	87,50~108,00 MHz
Sensibilité	2,0 μV (IHF utilisable)
S/B 30 dB	2,0 μV (300Ω), 1,0 μV (75Ω)
S/B 26 dB	1,8 μV (300Ω), 0,9 μV (75Ω)
S/B 20 dB	1,6 μV (300Ω), 0,8 μV (75Ω)
Sensibilité stéréo au seuil de 46 dB, IHF	22,0 μV/75Ω
Distorsion harmonique totale	
MONO	0,08%
STEREO	0,15%
Signal/Bruit	
MONO	70 dB (78 dB, IHF)
STEREO	65 dB (73 dB, IHF)
Réponse de fréquence	20 Hz~15 kHz, +0,5 dB~ −1,5 dB
Sélectivité alternée par canal	
normal ±400 kHz	65 dB
Taux de capture	1,0 dB
Rejection d'image à 98 MHz	55 dB
Rejection FI à 98 MHz	80 dB
Rejection de réponse parasite à 98 MHz	80 dB
Suppression AM	55 dB
Séparation stéréophonique	
1 kHz	40 dB
10 kHz	30 dB
Fuite de porteuse	
19 kHz	−30 dB (−35 dB, IHF)
38 kHz	−45 dB (−50 dB, IHF)
Equilibrage de canaux (250 Hz~6.300 Hz)	±1,0 dB
Point de limite	1,9 μV
Largeur de bande	
Amplificateur FI	180 kHz
Démodulateur FM	1000 kHz
Bornes d'antenne	300Ω (asymétrique)
	75Ω (asymétrique)

■ SECTION SYNTONISATEUR AM

Gamme de fréquence	522~1611 kHz (9 kHz par palier)
	530~1620 kHz (10 kHz par palier)
Sensibilité (S/B 20 dB)	20 μV, 300 μV/m
Sélectivité (±9 kHz)	55 dB
Réjection d'image à 999 kHz	40 dB
Réjection FI à 999 kHz	65 dB

■ DIVERS

Tension de sortie	0,6 V
Consommation	8W
Alimentation	CA 50 Hz/60 Hz, 220V
	(Pour l'Europe)
	CA 50 Hz/60 Hz, 110V/120V/220V/240V
	(Autres)
Dimensions (L×H×Pr)	430 × 53 × 245 mm
Poids	2,4 kg

■ MESURAGES ET REGLAGES

REGLAGE DE AM

• Réglage et équement utilisé

1. Voltmètres électronique de courant altèrnatif et de courant continu (VTVM)
2. Générateur du signal AM (AM-SG)
3. Sélecteur de gamme . . . . . AM
4. Régler le sélecteur d'attribution AM sur la position "10kHz".
5. Conservel la tension du secteur à la tension nominale.
6. Le signal du générateur ne doit pas étre plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
7. Utiliser un tournevis non-métallique pour la réglage.

No.	AM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	BRANCHEMENT	FREQUENCE				
	REGLAGE DE RF-AM					
1	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée faible)	612kHz (modulé à 30% par 400Hz)	612kHz	Brancher le voltmètre à courant alternatif et l'oscilloscope aux borne de sortie (OUT-PUT) de l'appareil.	L202 (Bobine Ant.)	1. Régler au maximum de signal de sortie. 2. Régler le noyau ferrite de L202 à l'aide d'un tournevis.
2		1503kHz (modulé à 30% par 400Hz)	1503kHz		CT201 (Trimmer Ant.)	1. Régler au maximum de signal de sortie. 2. Refaire les étapes (1) et (2) jusqu'à ce que le fréquence s'aligne correctement avec l'affichage du cadran.

REGLAGE DE FM

• Réglage et équipement untilisé

1. Générateur du signal FM (FM-SG)
2. Commande de réglage stéréophonique (ou vu-mètre de séparation).
3. Jauge de distorsion.
4. Oscilloscope.
5. Voltmètres électronique de courant alternatif et de courant continu (VTVM).
6. Compteur de fréquence (19kHz et 108MHz mesurable).
7. Antenne fictive FM, 300 ohms (Fig. 6)
8. Sélecteur d'entrée sur la position "FM".
9. Placer le sélecteur de mode FM sur la position "mono".
10. Les autres réglages sont les mêmes que pour la mise au point de l'amplitude modulée (AM).

• Préparation du générateur de signal FM (FM-SG)

1. Alimenter la sortie SG à la borne de l'antenne de l'appareil, par l'antenne fictive FM 300 ohms.
2. L'entrée standard de l'appareil est de 60dB (1mV), 400Hz, 100% de modulation (à cause de l'utilisation de l'antenne fictive, la sortie SG doit être de plus 12dB (IHF). Ce qui signifie que guand l'entrée est de 60dB, la sortie SG doit être de 72dB).

	FM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	BRANCHEMENT	FREQUENCE				
	REGLAGE DE LA DISTORSION FM EN MONO					
3	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Niveau de sortie du générateur 60dB).	100.1MHz (modulé à 100% par 400Hz)	100.1MHz	Brancher le voltmètre èlectronique a c.c. aux bornes TP101 et TP102. (Voir la Fig. 7)	T101 (Transfor FI discri.)	1. Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0mV dans la gamme des 1V.
4				Branchez un distor-tion métre sur les bornes de haut-parleur de appareil.	T102 (Transfor FI discri.)	1. Régler le noyou T102 de telle sorte que la distor-tion des canaux droit et gauche soit la plus faible.
	REGLAGE (VCO) PILOTE MULTIPLEX FM					
5	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal monoscous-tique.)	100.1MHz (Non modulé)	100.1MHz	Brancher le compteur de fréquences à la borne TP301 par l'intermédiaire d'une résistance de 100kΩ.	VR301 (VCO)	1. Commutateur de mode . . . . . auto 2. Régler VR301 sur 19 kHz ± 30 Hz.

ESPAÑOL

■ ESPECIFICACIONES (DIN 45 500) (Estas especificaciones están sujetas a cualquier cambio sin previo eviso.)

■ SECCION PARA SINTONIZADOR FM

Gama de frecuencias	87,50~108,00 MHz
Sensibilidad	2,0 μV (IHF, utilizable)
Señal a ruido 30 dB	2,0 μV (300Ω), 1,0 μV (75Ω)
Señal a ruido 26 dB	1,8 μV (300Ω), 0,9 μV (75Ω)
Señal a ruido 20 dB	1,6 μV (300Ω), 0,8 μV (75Ω)
Sensibilidad de acallamiento estéreo de 46 dB IHF	22,0 μV/75Ω
Distorsión armónica total	
MONO. (MONO)	0,08%
ESTEREO (STEREO)	0,15%
Relación de señal a ruido	
MONO. (MONO)	70 dB (78 dB, IHF)
ESTEREO (STEREO)	65 dB (73 dB, IHF)
Respuesta de frecuencia	20 Hz~15 kHz, +0,5 dB~ −1,5 dB
Selectividad alternada de canal	
normal ±400 kHz	65 dB
Relación de captura	1,0 dB
Rechazo de imagen a 98 MHz	55 dB
Rechazo de F.I. a 98 MHz	80 dB
Rechazo de respuesta espuria a 98 MHz	80 dB
Supresión AM	55 dB
Separación estereofónica	
1 kHz	40 dB
10 kHz	30 dB
Fuga de onda portadora	
19 kHz	−30 dB (−35 dB, IHF)
38 kHz	−45 dB (−50 dB, IHF)
Equilibrio de canales 250 Hz~6 300 Hz	±1,0 dB
Punto de límite	1,9 μV
Ancho de banda	
Amplificador FI	180 kHz
Demodulador FM	1000 kHz
Bornes de antena	300Ω (equilibrado), 75Ω (no equilibrado)

■ SECCION PARA SINTONIZADOR AM

Gama de frecuencias	522~1611 kHz (9 kHz-step) 530~1620 kHz (10 kHz-step)
Sensibilidad (Relación de señal a ruido de 20 dB)	20 μV, 300 μV/m
Selectividad (±9 kHz)	55 dB
Rechazo de imagen a 999 kHz	40 dB
Rechazo de F.I. a 999 kHz	65 dB

■ GENERAL

Voltaje de salida	0,6V
Consumo de energía	8W
Requisito de energía	CA 50 Hz/60 Hz, 220V (Para Europa continental) CA 50 Hz/60 Hz, 110V/120V/220V/240V (Para otros países)
Dimensiones (An.×Al.×Prof.)	430 × 53 × 245 mm
Peso	2,4 kg

ESPAÑOL

■ MEDICIONES Y AJUSTES

AJUSTE DE AM

• Puesta y Uso de equido

1. Voltimetros electronicos de CA y CC (VTVA).
2. Generador de señales AM (AM-SG)
3. Poner selector FM-AM en posición "AM".
4. Poner selector de asignación AM en posición "10kHz".
5. Mantener voltaje de línea a voltaje nominal.
6. La salida de generador de señales no debe ser mayor que la necesaria para obtener una lectura de salida.
7. Para el ajuste use un destornillador no metálico.

	AM GENERADOR DE SEÑALES		A FRECUENCIA DE PRESENTACION	PREPARACIONES	PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
	CONEXION	FRECUENCIA				
	AJUSTE RF-AM					
1	Conector AM-SG a terminal de antena AM a través de capacitor 200pF. Cumún a chasis. (Entrada débil)	612kHz (mod. 30% (con 400Hz)	612kHz	Conector VTVM de AC u osciloscopio a terminales "OUTPUT" (salida) del aparato.	L202 (Bobina ANT AM)	1. Ajustar para salida máxima. 2. Ajustar núcleo de ferrita de L202 con destornillador.
2		1503kHz (Mod. 30% con 400Hz)	1503kHz	Conector VTVM de AC u osciloscopio a terminales "OUTPUT" (salida) del aparato.	CT201 (Trimer de ANT AM)	1. Ajustor para solida máxima. 2. Repetir pasos (1) y (2) hasta que la frecuencia se adapte correctamente a la escala del cuadrante.

AJUSTE DE FM

• Equipo usado

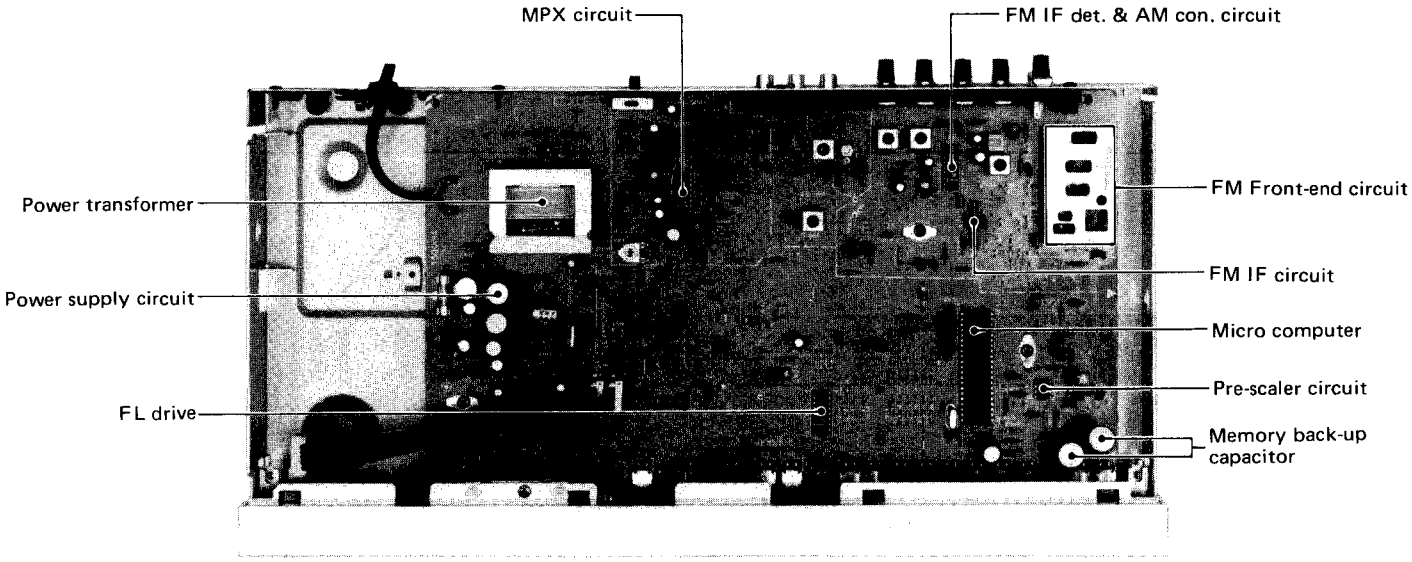
1. Generador de señales FM (FM-SG)
2. Modulador estereofónico (o medidor de separación).
3. Analizador de distortion.
4. Osciloscopio.
5. Voltimetros electrónicos de CA y CC (VTVM).
6. Frecuencimetro (19kHz y 108MHz medibles).
7. Antena ficticia de 300Ω FM (Fig. 6) y filtro de paso bajo (fc: 15kHz-19kHz).
8. Poner selector FM-AM en posicion "FM".
9. Poner el interruptor de modalidad FM en la posición "MONO".
10. Otras puestas son las mismas que en ajuste AM.

• Preparación de generador de señales FM (FM. SG).

1. Aplicar salida SG a terminal de antena del aparato a través de antena ficticia de 300Ω FM.
2. La entrada standard del aparato es 60dB (1mV), modulación 100% 400Hz (Por el uso de antena ficticia, la salida de SG ha de ser 12dB más (IHF). Es decir, cuando entrada es 60dB, salida de SG ha de ser 72dB).

	FM GENERADOR DE SEÑALES		A FREQUENCIA DE PRESENTACION	PREPARACIONES	PIEZAS AJUSTADAS	PROCEDIMIENTO DE AJUSTE
	CONEXION	FRECUENCIA				
	AJUSTE DE DISTORSION FM MONO					
3	Conectar FM-SG a terminal de antena FM a través de antena ficticia FM de 300Ω. (Aplicar 60dB a terminal de antena)	No señal.	100.1MHz	Conector VTVM CC entre terminal TP101 y TP102 a través de bobina de choque. (Referira Fig. 7).	T101 (Discri. IFT)	1. Ajustar núcleo de T101 de manera que voltaje medido en modalidad de señal se 0mV en gama de 1V.
4				Conectar el analizador de distorsión a terminales "OUTPUT" del aparato.	T102 (Discri. IFT)	1. Ajustar núcleo de T102 de manera que distorsión de canales derecho e izquierdo se minimice.
	AJUSTE DE PILOTO (VCO) MPX FM					
5	Conectar FM-SG a terminal de antena FM a través de antena ficticia FM de 300Ω.	100.1MHz (No modulados)	100.1MHz	Conectar frecuencímetro a terminal TP301 a través de resistor (100kHz)	VR301 (VCO)	1. Poner el interruptor de modalidad FM en la posición "auto". 2. Ajustar VR301 a 19kHz ±30Hz.

Printed in Japan
82034500 Ⓗ SH/TN



■ HOW TO OPERATE

• Listening to radio broadcasts

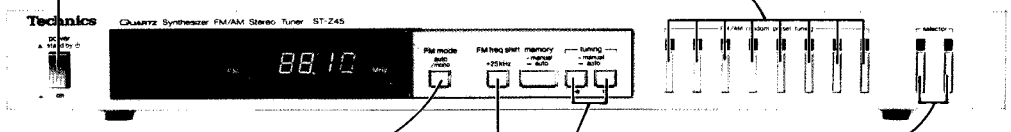
Important!

If this antenna is not installed, AM broadcasts will not be received.

1 Turn the amplifier on, and prepare it for listening to radio broadcasts.

2 **Power: "on" (▲→▲)**

3-1 **Station selection:**
If the station has been preset: Tune to the desired station by pressing the corresponding preset-tuning button.

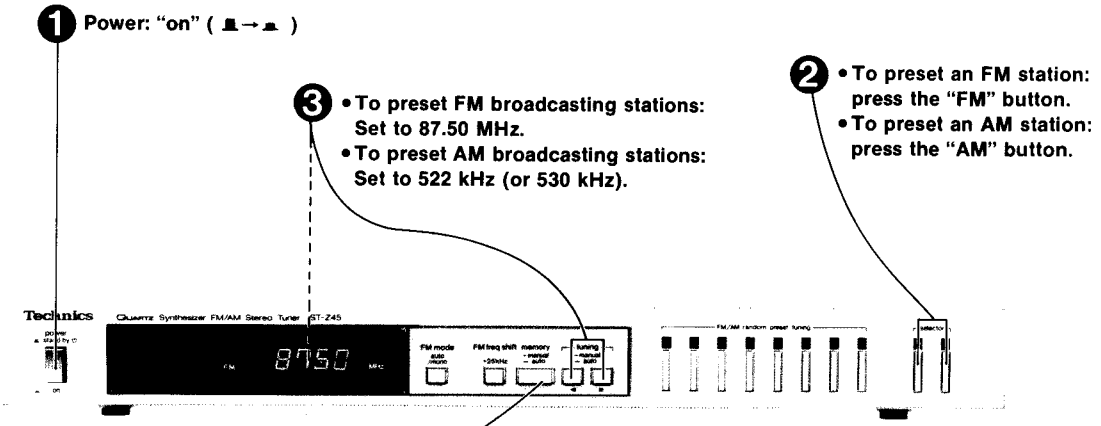


3-2 **Station selection:**
In order to select a station by using the tuning buttons:
1) Press either "FM" or "AM".
2) Press to select the desired broadcasting station frequency.

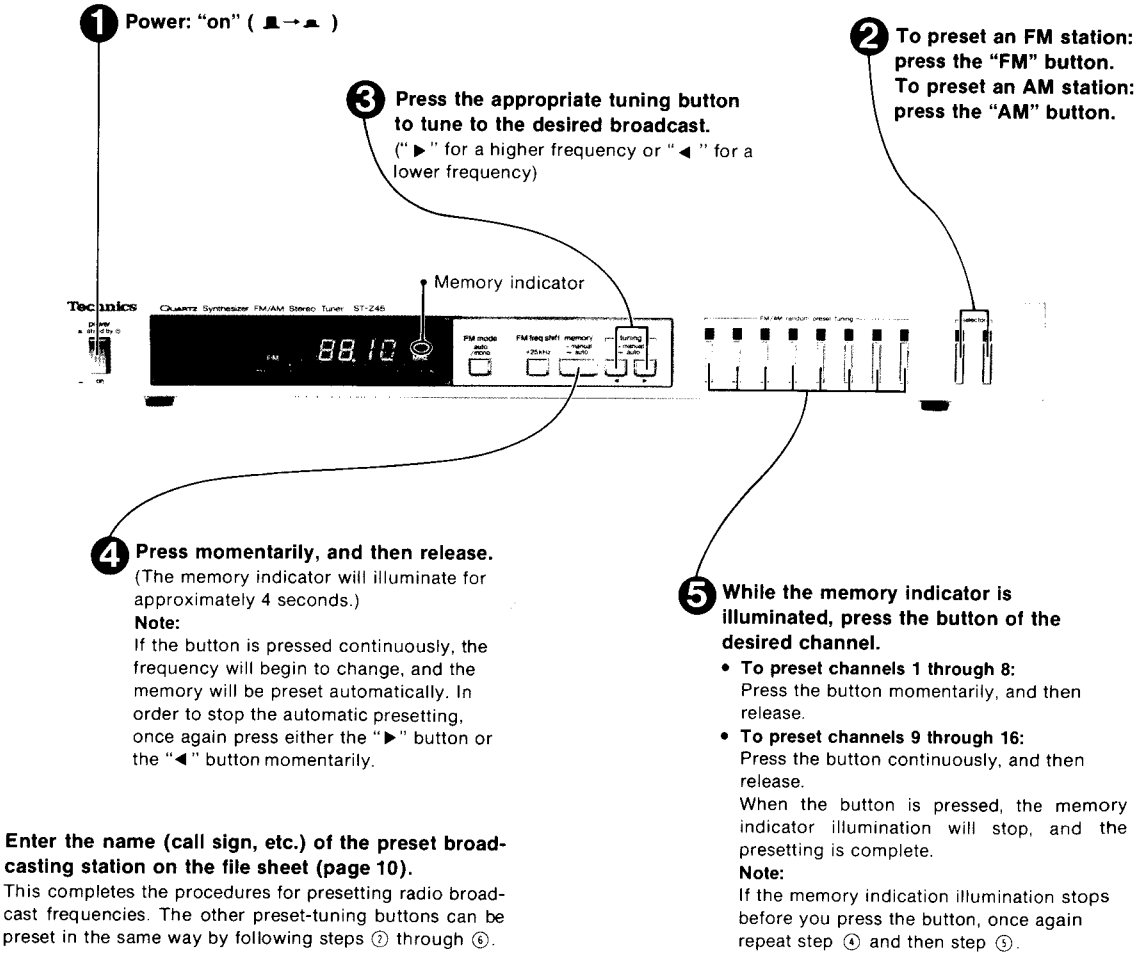
4
If the broadcast signal is weak, or if there is a large amount of interference in a stereo broadcast, set to the mono position. Note that the FM stereo indicator will not illuminate in this position.

3-3 **Station selection:**
To listen to a broadcasting station whose frequency is located on a 0.025 MHz step, such as 98.025 MHz or 98.075 MHz, first select the station using the preset tuning button or the tuning button, and then press this button.

• Automatic memory presetting


1 Power: "on" (⏻→⏻)
2 • To preset an FM station: press the "FM" button.
• To preset an AM station: press the "AM" button.
3 • To preset FM broadcasting stations: Set to 87.50 MHz.
• To preset AM broadcasting stations: Set to 522 kHz (or 530 kHz).
4 Press. When the frequency indication begins to change, release.
(The frequency will change upward, and the automatic presetting will begin with the broadcasting station of the lowest frequency and will continue in order.)
5 Confirm the names (call signs, etc.) of the broadcasting stations which are preset to each channel, and enter them on the file sheet below.

• Manual memory presetting


1 Power: "on" (⏻→⏻)
2 To preset an FM station: press the "FM" button.
To preset an AM station: press the "AM" button.
3 Press the appropriate tuning button to tune to the desired broadcast.
(" ▶ " for a higher frequency or " ◀ " for a lower frequency)
Memory indicator
4 Press momentarily, and then release.
(The memory indicator will illuminate for approximately 4 seconds.)
Note:
If the button is pressed continuously, the frequency will begin to change, and the memory will be preset automatically. In order to stop the automatic presetting, once again press either the " ▶ " button or the " ◀ " button momentarily.
5 While the memory indicator is illuminated, press the button of the desired channel.
• To preset channels 1 through 8:
Press the button momentarily, and then release.
• To preset channels 9 through 16:
Press the button continuously, and then release.
When the button is pressed, the memory indicator illumination will stop, and the presetting is complete.
Note:
If the memory indication illumination stops before you press the button, once again repeat step ④ and then step ⑤.
6 Enter the name (call sign, etc.) of the preset broadcasting station on the file sheet (page 10).
This completes the procedures for presetting radio broadcast frequencies. The other preset-tuning buttons can be preset in the same way by following steps ② through ⑥.

Notes regarding manual memory presetting

If the memory is to be preset manually, be sure to release the memory button after pressing it only momentarily.
If the button is pressed continuously, the frequency will begin to change and the memory will be preset automatically; if this happens, the broadcasting stations which were previously preset will be replaced by other broadcasting stations.

■ DISASSEMBLY INSTRUCTIONS

When repairing the FM front-end pack, replace it with the adjusted part for repair.

• How to remove the printed circuit board

1. Remove the 4 setscrews (❶ ~ ❹ in Fig. 1) of the cabinet.
2. Move the cabinet in the direction of the arrow Ⓐ in Fig. 1.
3. Remove the 3 setscrews (❺ ~ ❼ in Fig. 1) of the front panel and the 2 setscrews (❽, ❾ in Fig. 2) of the rear panel.
4. Remove the 6 setscrews (❿ ~ ⓯ in Fig. 3) of the printed circuit board.
5. Pushing the 2 claws at the right and left bottoms of the front panel in the direction of the arrow Ⓑ (Fig. 4), remove the printed circuit board along with the front panel in the direction of the arrow Ⓒ (Fig. 4).
   (Raise the printed circuit board when repairing)

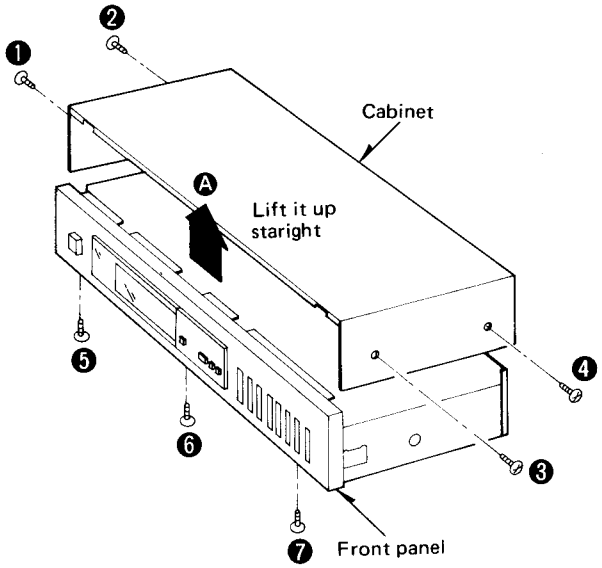


Fig. 1

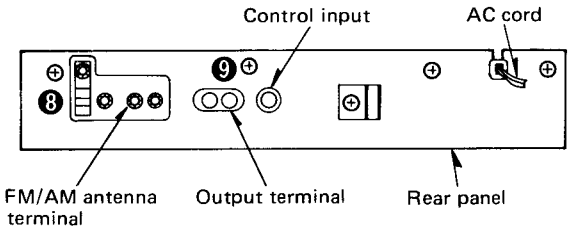


Fig. 2

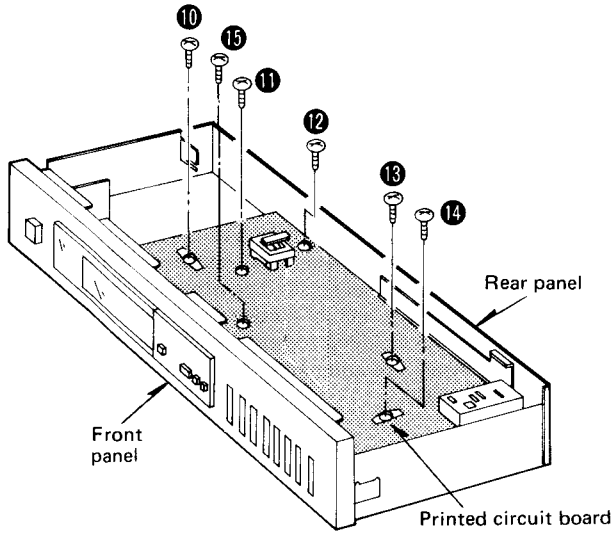


Fig. 3

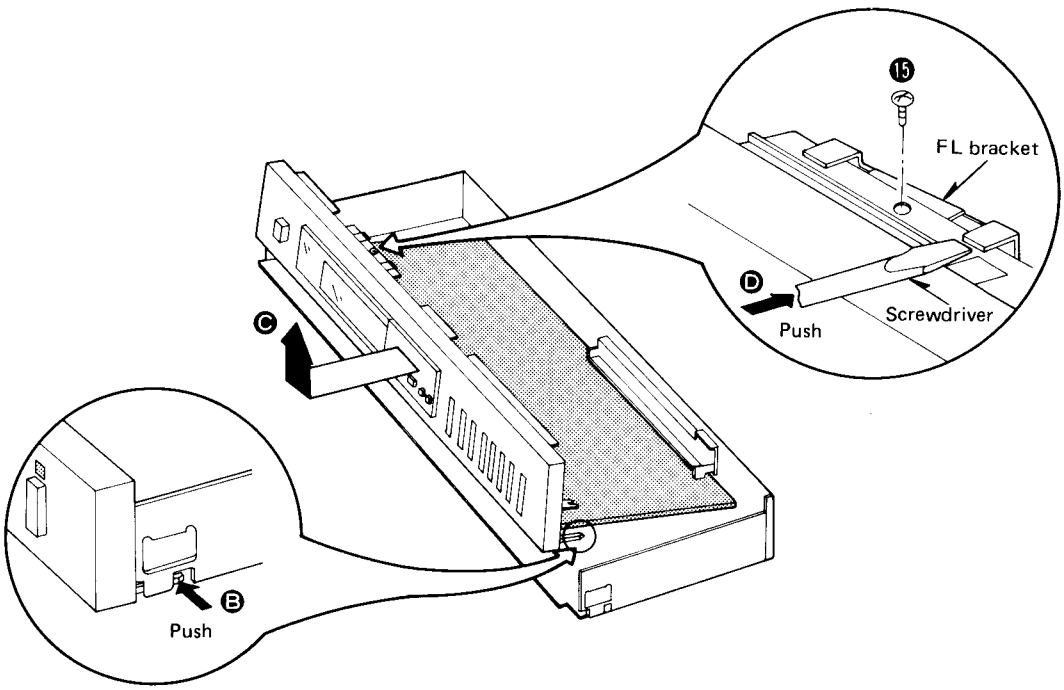


Fig. 4

• How to remove the front sub-panel

1. Remove the printed circuit board.
   (Refer to "How to remove the printed circuit board".)
2. Remove the setscrew (Fig. 4 : ⓯) which fastens the bracket of FL. Next, remove the bracket by pushing it in the direction of the arrow Ⓓ with a screwdriver.
3. The claws projected (at 8 portions) from the front sub-panel are engaged with the front panel.
   Disengage the claws from by screwdriver or the like to remove the front sub-panel. (See Fig. 5)

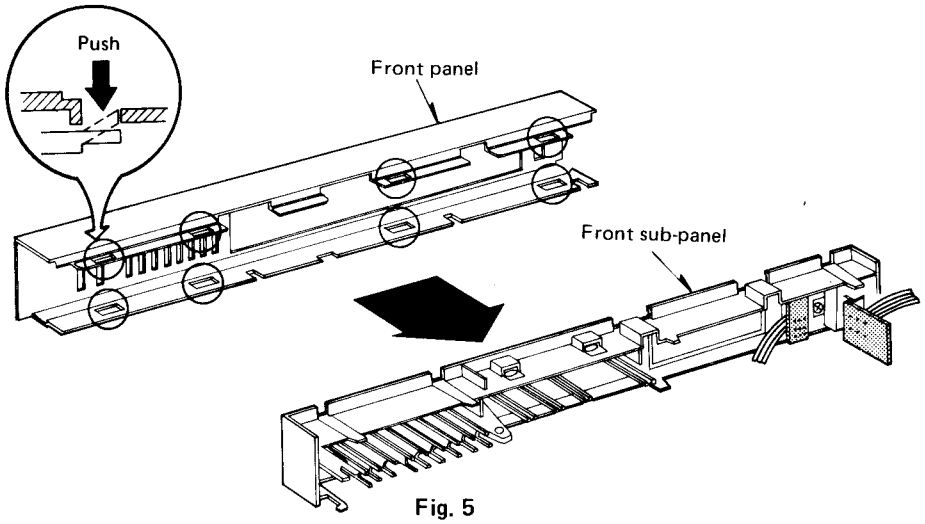
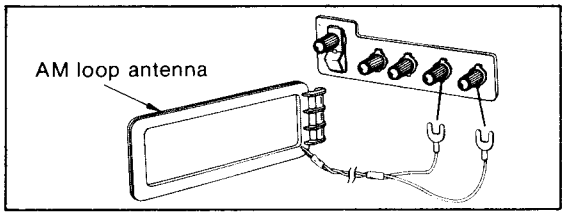


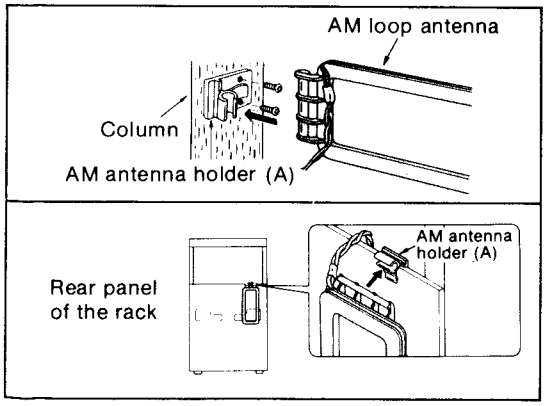
Fig. 5

• How to use the AM loop antenna

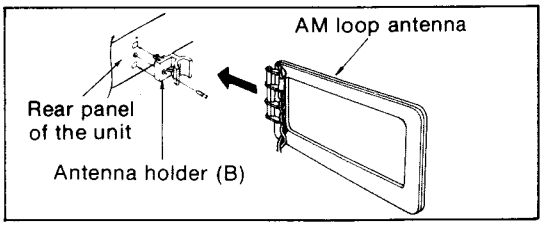
1. Pay attention to the following points when attaching the antenna.
   1) Do not attach it horizontally (to do so would impair reception).
   2) Do not attach it close to metal surfaces (to do so would result in noise).
   3) Do not attach it close to power cords, speaker wires, etc. (to do so would result in noise).
   4) Do not attach it close to a tape deck (when the tape deck is being used, tweeting or beeping sounds may be received).
2. How to attach the AM loop antenna.
   1) Connect the AM loop antenna to the AM antenna terminals located on the rear panel of the unit.



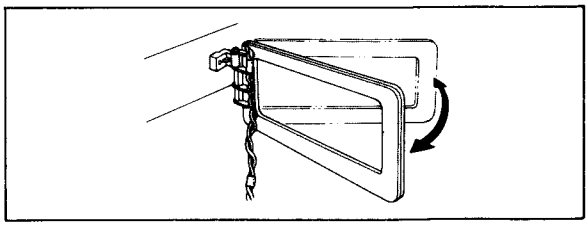
   2) Find the height and direction of the antenna where reception is best and then fix it vertically to the wall, rack, etc.
      a When attaching the antenna to a wall, column or rack, attach the included AM antenna holder (A) to the wall or column, and then insert the antenna into place in the holder.



      b If the holder cannot be fixed in place by screws, hang the antenna on a small hook or other suitable fixture.
      c When attaching the antenna to the unit.
      This type of installation may cause impaired reception or result in signal noise. If possible, attach the antenna to the rack, a wall, or a column.
      Attach the included AM antenna holder (B) to the unit, and insert the antenna into place in the AM antenna holder (B).



3. Move the antenna toward the right or left to find the point of best reception.
   Note:
   If the antenna is hung from a hook, or from the rear panel of the rack, this is not necessary.



■ MEASUREMENTS AND ADJUSTMENTS

AM ADJUSTMENT

* **Setting and Equipment used**

1. AC and DC electronic voltmeters (VTVM)
2. AM signal generator (AM-SG)
3. Set FM-AM selector to "AM" position.
4. Set AM allocation selector to "10 kHz" position.
5. Maintain line voltage at rated voltage.
6. Output of signal generator should be no higher than necessary to obtain an output reading.
7. Use a non-metal screwdriver for the adjustment.

Step No.	AM SIGNAL GENERATOR CONNECTION	AM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	AM-RF ADJUSTMENT					
1	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input)	612 kHz (30% Mod. with 400 Hz)	612 kHz	Connect AC VTVM or scope to "Output terminals" of the set.	L202 (ANT Coil)	1. Adjust for maximum output. 2. Adjust ferrite core of L202 by screwdriver.
2		1503 kHz (30% Mod. with 400 Hz)	1503 kHz	Connect AC VTVM or scope to "Output terminals" of the set.	CT201 (ANT Trimmer)	1. Adjust for maximum output. 2. Repeat steps (1) and (2) until the frequency correctly matches the dial display.

FM ADJUSTMENT

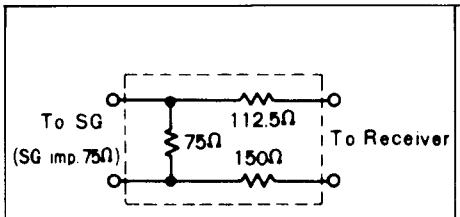
* **Setting and Equipment use**

1. FM signal generator (FM-SG)
2. Stereo modulator (or separation meter)
3. Distortion analyser.
4. Oscilloscope.
5. AC and DC electronic voltmeters (VTVM).
6. Frequency counter (19 kHz and 108 MHz measurable)
7. FM 300 Ω dummy antenna (Fig. 6) and low-pass filter (fc : 15 kHz ~ 19 kHz).
8. Set FM-AM selector to "FM" position.
9. Set FM mode switch to "mono" position.
10. Other setting are the same as in AM adjustment.

* **Preparation of FM signal generator (FM-SG)**

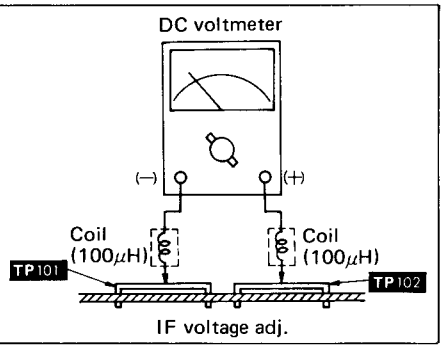
1. Apply SG output to antenna terminal of the set through 300Ω FM dummy antenna.
2. The standard input of the set is 60 dB (1mV), 400 Hz 100% modulation (Because of using dummy antenna, SG output must be 12 dB plus (IHF). That is, when input 60 dB, SG output is to be 72 dB.)

Step No.	FM SIGNAL GENERATOR CONNECTION	FM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	FM MONO DISTORTION ADJUSTMENT					
3	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna. (Apply 60 dB to antenna terminal)	No-Signal	100.1 MHz	Connect DC VTVM to between TP101 and TP102 through choke coil. (Refer to Fig. 7)	T101 (Discri. IFT)	1. Adjust T101 core so that voltage measured in signal mode is 0mV in 1V range. 2. Adjust T102 core so that distortion of right and left channels are minimized.
4		No-Signal	100.1 MHz	Connect distortion analyser to "Output terminals" of the set.	T102 (Discri. IFT)	
	FM MPX PILOT (VCO) ADJUSTMENT					
5	Connect FM-SG to FM antenna terminal through 300Ω FM dummy antenna.	100.1 MHz (Non-modulated)	100.1 MHz	Connect frequency counter to TP301 terminal through resistor. (100kΩ)	VR301 (VCO)	1. Set the Auto scan/FM mode selector to "auto". 2. Adjust VR301 to 19 kHz ± 30 Hz.



300Ω FM Dummy Antenna

Fig. 6

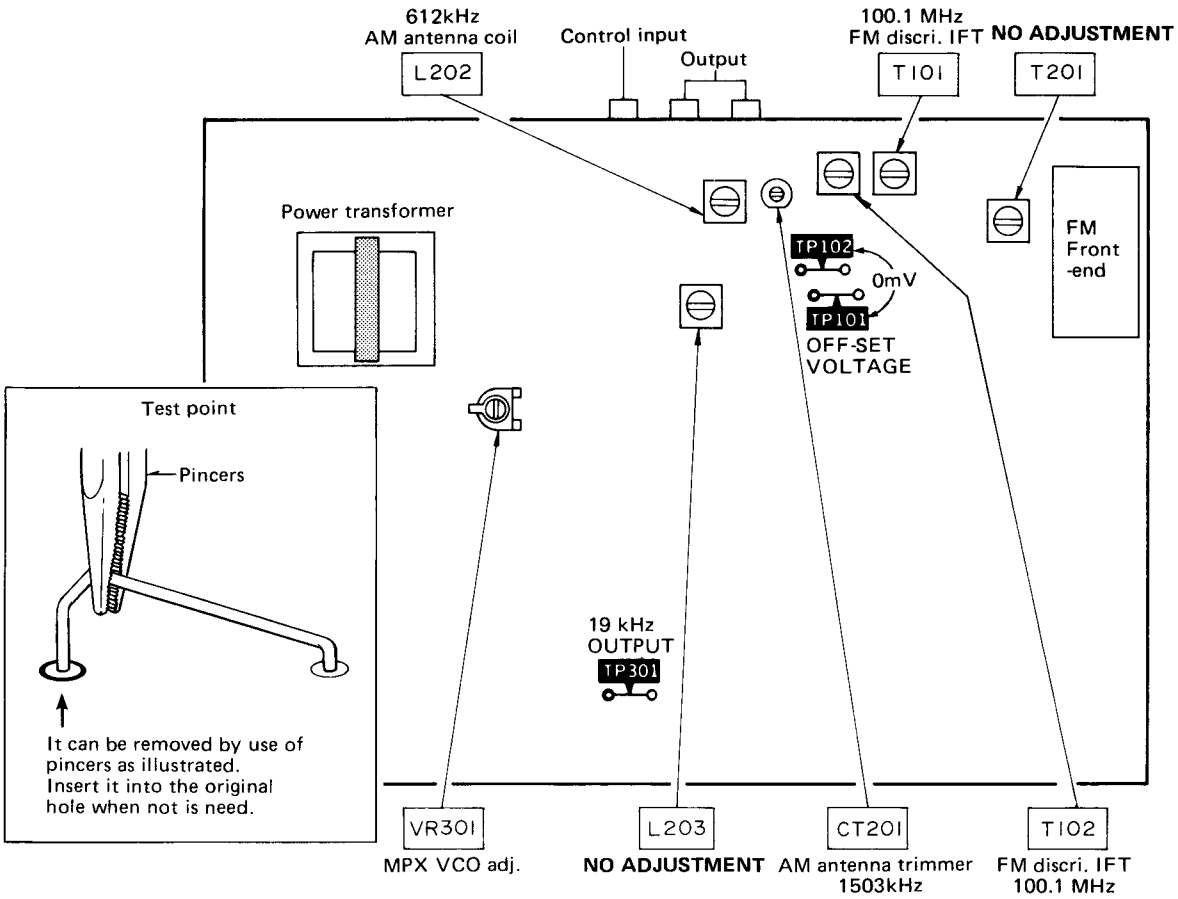


IF voltage adj.

Fig. 7

- **Adjustment points**

Note: AM OSC coil (L203) and AM IFT (T201) have been already adjusted, and require no adjustment.



■ REPLACEMENT PARTS LIST...Electric Parts

Notes: 1. Parts numbers are indicated on most mechanical parts. Please this part number for parts orders.

2. Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

3. Bracketed indicators in Ref. No. columns specify the area.

4. The " **S** " mark is service standard parts and may differ from production parts.

Areas

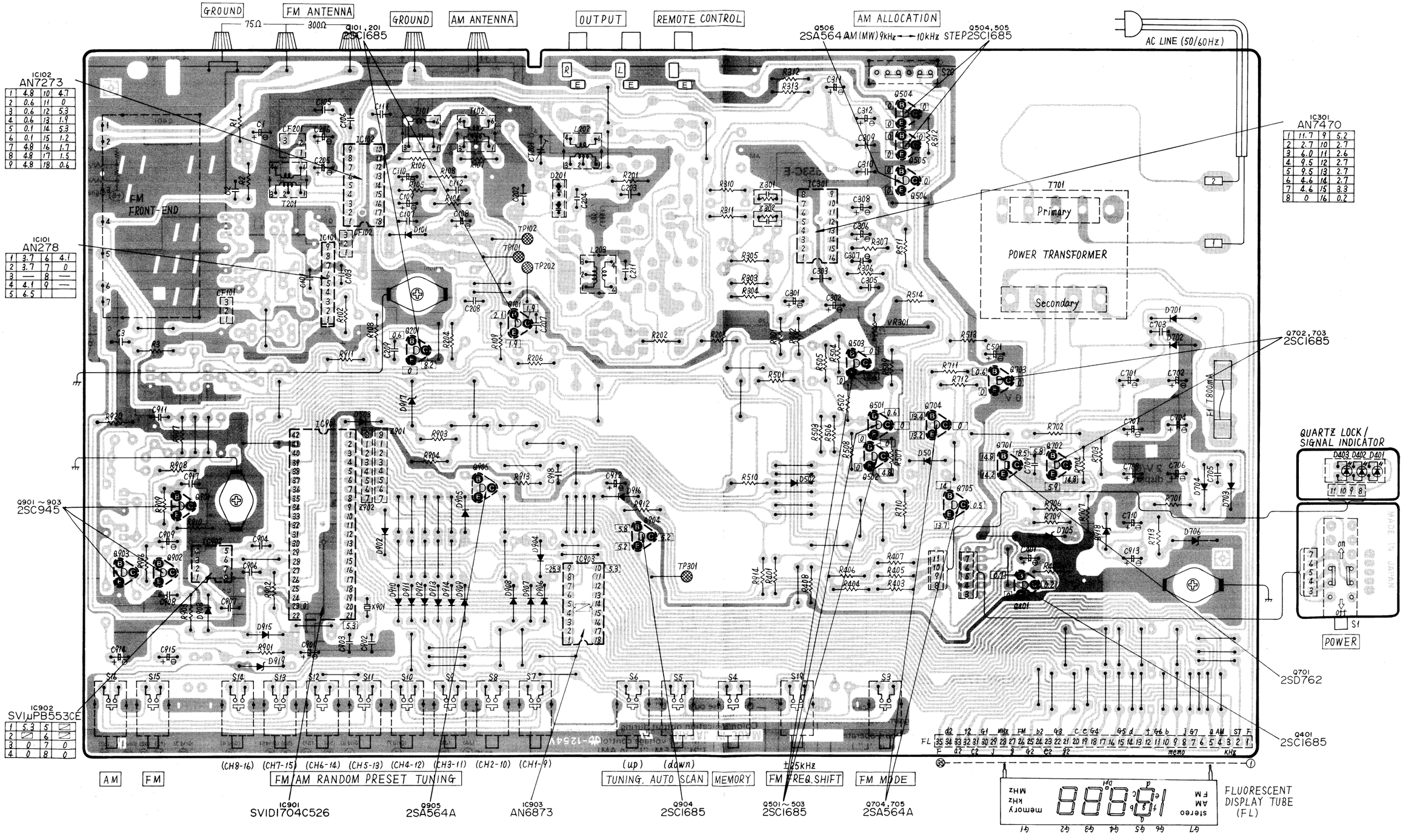
* [EX] is available in Switzerland and Scandinavia.
* [EH] is available in Holland.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.

Ref. No.	Part No.	Description
INTEGTATED CIRCUITS		
IC101	AN278	FM IF
IC102	AN7273	FM IF DET. AM Converter
IC301	SVIUPC1161C3	MPX
IC901	SVID1704C526	Micro-Computer
IC902	SVIUPB553AC	Pre-Scaler
IC903	AN6873	FL Driver
TRANSISTORS		
Q101, 201, 401 S 501 ~ 505, 702, 703, 904	2SC1685–S	Switching, AM OSC Buffer, Muting, Regulator
Q506, 704, 705 S 905	2SA564AR	Muting, Switching
Q701	2SD762–O	Regulator
Q901 ~ 903 S	2SC945–Q	Loop Filter
DIODES		
D101	MA27W–A	Switching
D201	SVDKV1236Z	AM Variable Capacitor
D401 ~ 403	LN417YP	LED, Quartz Lock
D501 ~ 503 S 902 ~ 916	MA162A	Switching
D701 ~ 704 ⚠ S	SVDSR1K2	Rectifier
D705	SVDMZ306A	6V, Zener
D706	SVDMZ324B	24V, Zener
D917	SVDMZ309A	9V, Zener
D918	SVDMZ307A	7V, Zener
D919	SVDMZ305A	5V, Zener
COILS		
L202	SLA2C5–P	AM Antenna
L203	SLO2C29R–P	AM OSC
TRANSFORMERS		
T101	SLI4C535–Z	FM IFT
T102	SLI4C537–Z	FM IFT
T201	SLI2C141–M	AM IFT
T701 ⚠	SLT5K129	Power Source
T701 [XA] ⚠	SLT5K133	Power Source
T701 [XL] ⚠	SLT5J191	Power Source
CERAMIC FILTERS		
CF101, 102	SVFE107MM–A	FM 10.7 MHz (1) (Red)
	SVFE107MM–D	FM 10.64 MHz(1) (Black)
	(Use pair ranks as same as CF101 and CF102)	
CF201	SVFSFP450HT	AM 450 kHz
CRYSTAL		
X901	SVQ43U452	4.5 MHz Counter Oscillator
FLUORESCENT DISPLAY TUBE		
FL	SAD7MT29ZA	

Ref. No.	Part No.	Description
VARIABLE RESISTOR		
VR301 S	EVTS3MA00B53	MPX VCO Adjustment, 5kΩ (B)
VARIABLE CAPACITOR		
CT201	SVCTZ03T110F	AM Antenna
COMPONENT COMBINATIONS		
Z301, 302	EXRP181K473T	180pF, 47kΩ
Z901	EXBP87104K	100kΩ (x 7)
Z902	EXFP7331MW	330pF (x 7)
SWITCHES		
S1 ⚠	SSH1049	Power Source
S2 [XA] only ⚠	SSR179	Voltage Adjustment
S3 ~ 16, 19	SSG11	Memory, Tuning, Preset Mode, FM 25 kHz Sift
S20	SSS49	AM Allocation Selection
FM FRONT END		
	SNVFE306E05	FM RF
FUSE		
F1 ⚠	XBA2C05TR0	250V, T 500mA

■ CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

Ground (Earth) lines



ST-Z45

■ BLOCK DIAGRAM

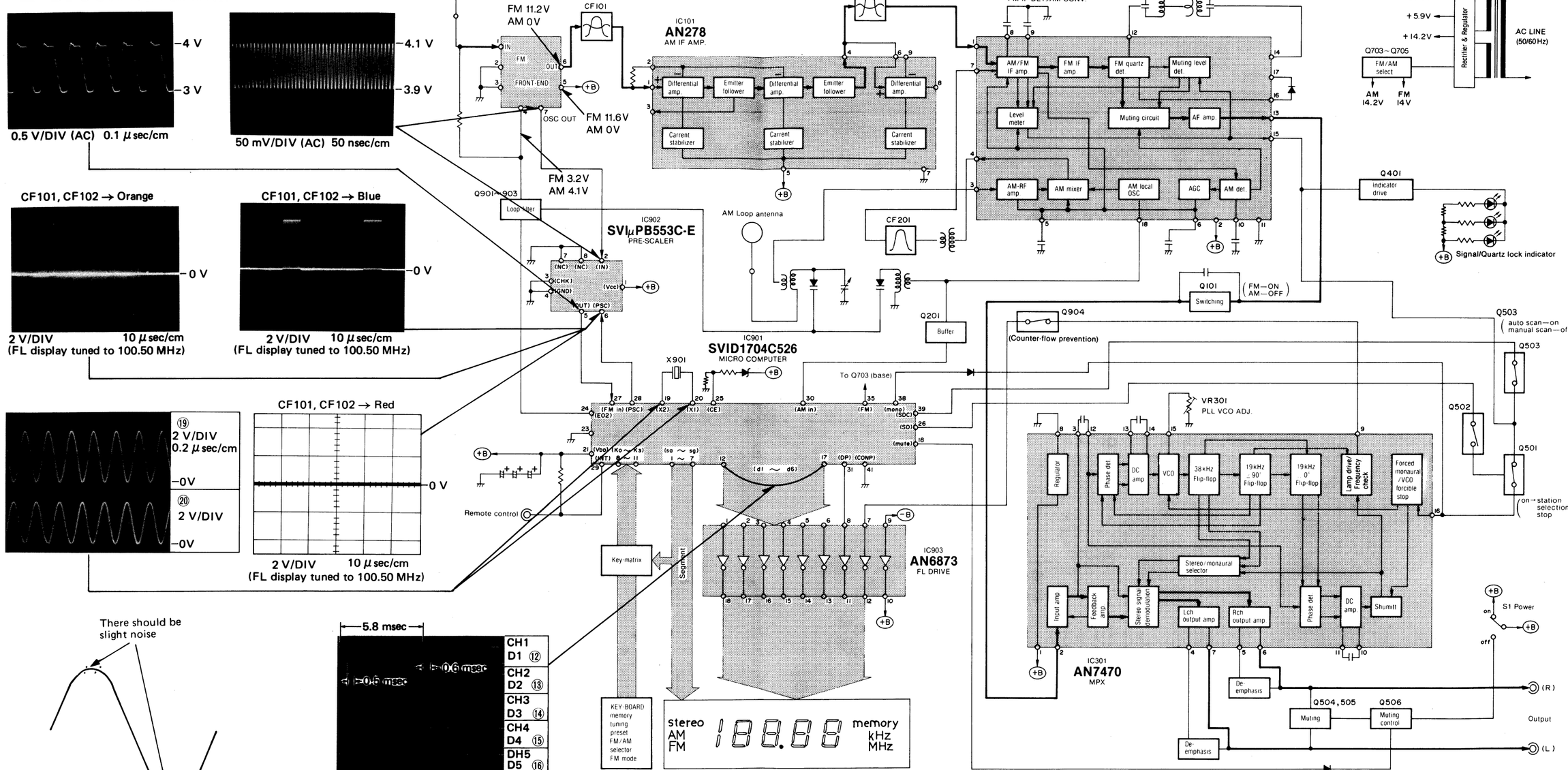
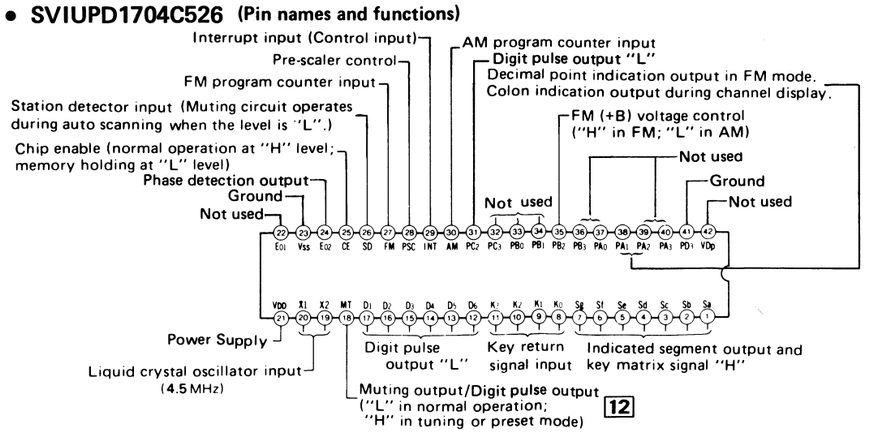


Fig. 8

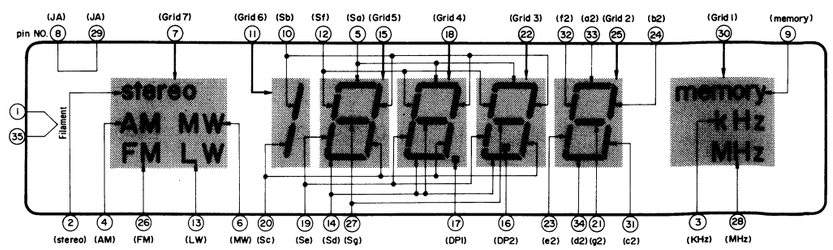
- **How to check FM front-end**

1. Check that the voltage at terminal ⑤ is DC 11.6V.
2. Check the waveform to see that the FM local oscillation circuit of terminal ⑦ is normal.
3. Check that the voltage at terminal ⑥ is DC 11.2V. (11.2V in FM and 0V in AM)
4. After cutting off the line between terminals ⑥ and CF101 terminal ①.
   Make sure that the output waveform is Fig. 8 when the signal of FM-SG (10.7 MHz, 400 Hz, 26 dB) is directly applied to terminal ① of CF101.

- **SVIUPD1704C526 (Pin names and functions)**


Interrupt input (Control input)
Pre-scaler control
FM program counter input
Station detector input (Muting circuit operates during auto scanning when the level is "L".)
Chip enable (normal operation at "H" level; memory holding at "L" level)
Phase detection output
Ground
Not used
AM program counter input
Digit pulse output "L"
Decimal point indication output in FM mode.
Colon indication output during channel display.
FM (+B) voltage control ("H" in FM; "L" in AM)
Not used
Ground
Not used
Not used
Power Supply
Liquid crystal oscillator input (4.5MHz)
Digit pulse output "L"
Key return signal input
Indicated segment output and key matrix signal "H"
Muting output/Digit pulse output ("L" in normal operation; "H" in tuning or preset mode)

- **Fluorescent Display Tube (FL)**



■ SCHEMATIC DIAGRAM

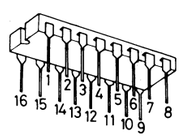
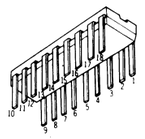
(This schematic diagram may be modified at any time with the development of new technology.)

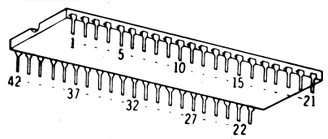
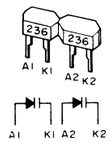
* The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. without ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.
* This is the basic circuit diagram of this unit. Note that part of the circuit is subject to change depending on the areas.

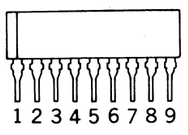
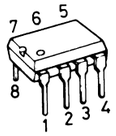
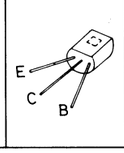
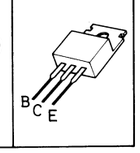
Note:

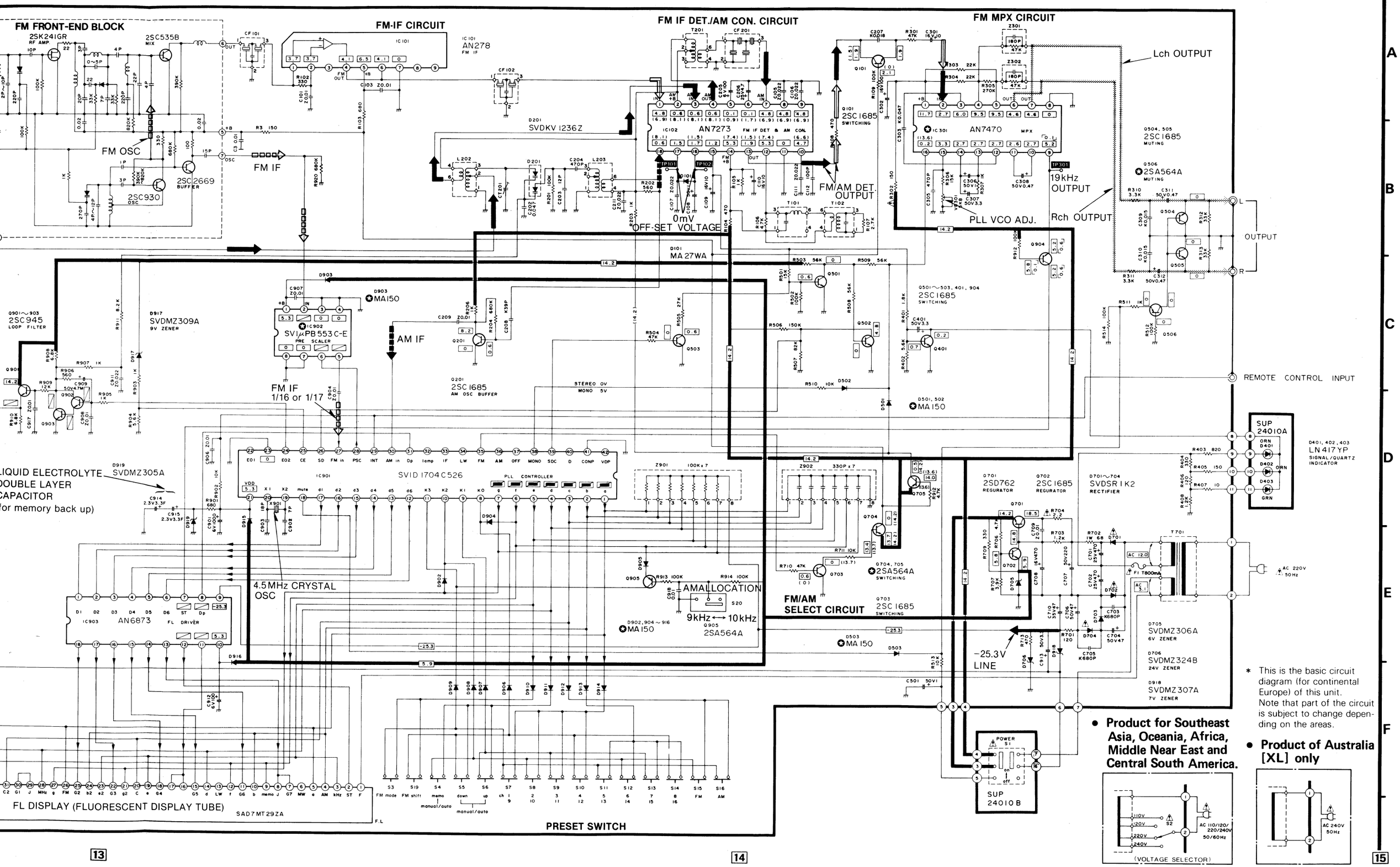
1. **S1** : Power source switch in "**on**" position.
2. **S3** : FM mode switch. (auto⟷mono)
3. **S4** : Memory set switch. (manual⟷auto memory)
4. **S5** : Tuning (down) switch. (manual⟷auto) [down : tuning to lower frequency]
5. **S6** : Tuning (up) switch. (manual⟷auto) [up : tuning to higher frequency]
6. **S7 ~ S14** : Preset tuning switch.
   * With it lightly pushed (less than 0.4 sec.) and released, the 1 ~ 8 CH (front stations) are received.
   * With it continuously pushed (0.4 sec. or more) and released, the 9 ~ 16 CH (back stations) are received.
7. **S15** : FM selector switch.
8. **S16** : AM selector switch.
9. **S19** : FM frequency shift.
10. **S20** : AM allocation switch in "**10 kHz step**" position. 9 kHz⟷10 kHz step
11. **S2** [XA] only : Voltage selector switch in "**220V**." position. 110V⟷120V⟷220V⟷240V
12. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    * Figures in ☐ stand for DC voltage in FM signal (no signal) reception mode.
    * Figures in ⌜ ⌟ stand for DC voltage in FM stereo signal reception mode.
    * Figures in ( ) stand for DC voltage in AM signal reception mode.
    * Figures in ▨ H→5V : L→0V
    * Figures in ▬ H→5V : L→−23V
13. ▬ Positive voltage lines ▒ AF signal lines
    ⇨ FM signal ▭▭ FM IF ➡ AM signal ▬▬ AM IF
14. Important safety notice.
    Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.

• Terminal guide of transistors, IC's and diodes

AN278	AN7273, AN6873
	

SVID1704C526	SVDKV1236Z
	

SVIUPC1161C3	SVIUPB553C-E	2SC1685	2SD762
			


FM FRONT-END BLOCK
2SK241GR RF AMP.
2SC535B MIX
FM OSC
2SC2669 BUFFER
2SC930 OSC
FM IF
FM-IF CIRCUIT
IC101 AN278 FM IF
SVDKV1236Z
FM IF DET./AM CON. CIRCUIT
IC102 AN7273 FM IF DET & AM CON.
0mV OFF-SET VOLTAGE
FM/AM DET. OUTPUT
Q101 2SC1685 SWITCHING
FM MPX CIRCUIT
IC301 AN7470 MPX
19kHz OUTPUT
PLL VCO ADJ.
Lch OUTPUT
Rch OUTPUT
0504, 505 2SC1685 MUTING
0506 2SA564A MUTING
L
R
OUTPUT
REMOTE CONTROL INPUT
SUP 24010A
D401, 402, 403 LN417YP SIGNAL/QUARTZ INDICATOR
Q901~903 2SC945 LOOP FILTER
D917 SVDMZ309A 9V ZENER
D903 MA150
SVI4PB553C-E PRE SCALER
AM IF
FM IF 1/16 or 1/17
Q201 2SC1685 AM OSC BUFFER
STEREO 0V MONO 5V
D501, 502 MA150
Q501~503, 401, 904 2SC1685 SWITCHING
D919 SVDMZ305A
LIQUID ELECTROLYTE DOUBLE LAYER CAPACITOR (for memory back up)
IC901 SVID1704C526
PLL CONTROLLER
4.5MHz CRYSTAL OSC
IC903 AN6873 FL DRIVER
FL DISPLAY (FLUORESCENT DISPLAY TUBE)
SAD7MT29ZA
D902, 904~916 MA150
Q905 2SA564A
AMALLOCATION
9kHz ↔ 10kHz
S20
PRESET SWITCH
FM/AM SELECT CIRCUIT
Q703 2SC1685 SWITCHING
Q704, 705 2SA564A SWITCHING
D503 MA150
-25.3V LINE
Q701 2SD762 REGURATOR
Q702 2SC1685 REGURATOR
D701~704 SVDSR1K2 RECTIFIER
T701
AC 220V 50Hz
AC 12.0
AC 3.1
FI T800mA
D705 SVDMZ306A 6V ZENER
D706 SVDMZ324B 24V ZENER
D918 SVDMZ307A 7V ZENER
POWER S1
SUP 24010B
• Product for Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
(VOLTAGE SELECTOR)
AC 110/120/220/240V 50/60Hz
AC 240V 50Hz
• Product of Australia [XL] only
* This is the basic circuit diagram (for continental Europe) of this unit.
Note that part of the circuit is subject to change depending on the areas.

■ RESISTOR & CAPACITOR

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. This "**S**" mark is service standard parts and may differ from production parts.
5. Unless otherwise specified. All resistors are in OHMS (Ω) K = 1000Ω , M = 1000kΩ All capacitors are in MICROFARADS (μF) P = μμF

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

ERQ	1	C	J	680
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon	25 : 1/4W	J : ± 5%
ERQ : Fuse Type Metal	1 : 1W	

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

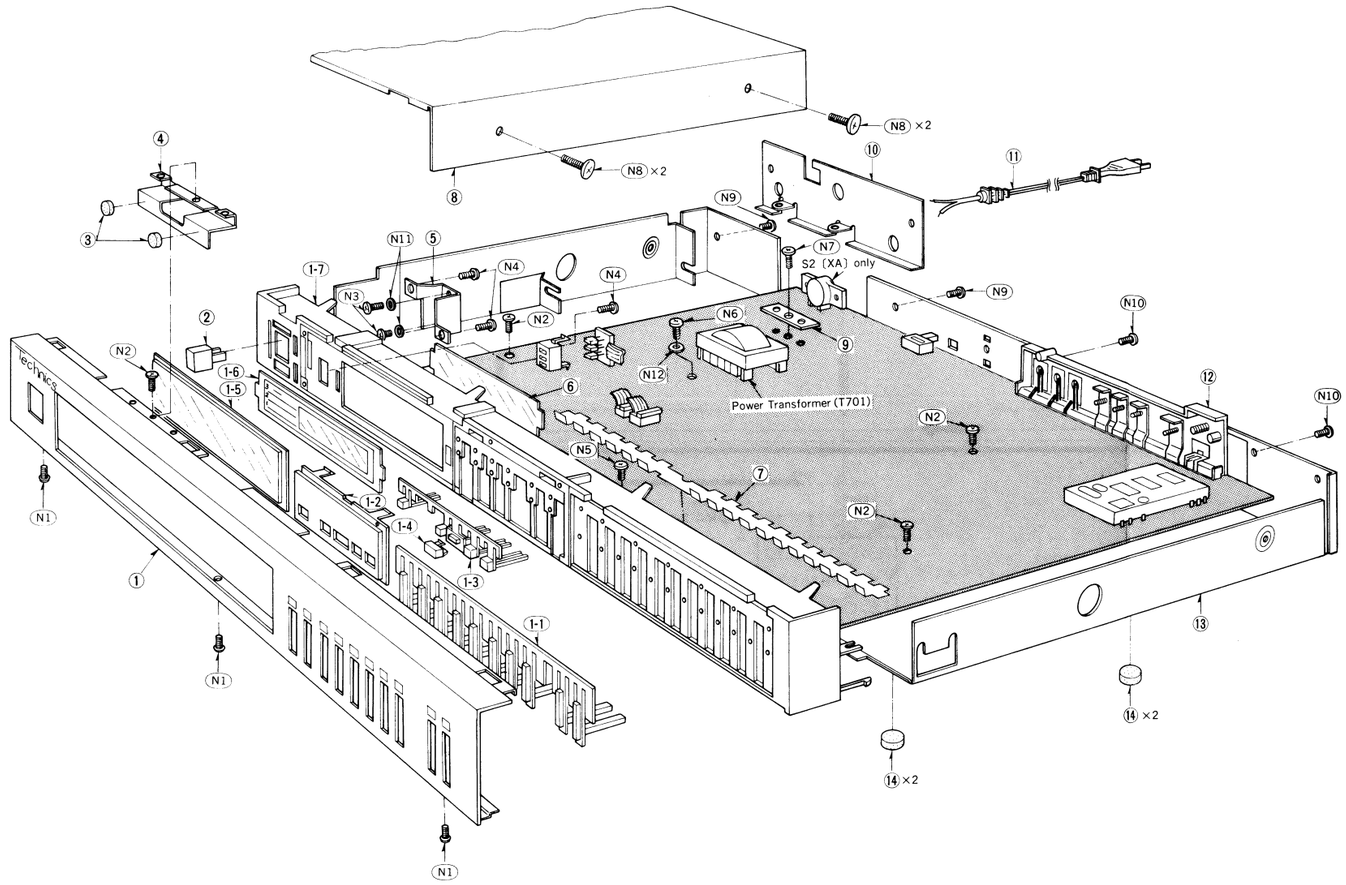
ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Capacitor Type	Voltage: ECEA Type	Voltage: Other	Tolerance
ECEA : Electrolytic	OJ : 6.3V	1H : 50V DC	C : ± 0.25pF
ECCD : Ceramic	1A : 10V	2H : 500V DC	J : ± 5%
ECKD : Ceramic	1C : 16V		K : ± 10%
ECQM : Polyester	1E : 25V		Z : +80%, −20%
ECQP : Polypropylene	1H : 50V		
	50 : 50V		
	25 : 25V		

Ref. No.		Part No.	Value
RESISTORS			
R1	S	ERD25TJ104	100k
R2	S	ERD25TJ273	27k
R3	S	ERD25FJ151	150
R102	S	ERD25FJ331	330
R103	S	ERD25FJ681	680
R104	S	ERD25FJ471	470
R105	S	ERD25FJ102	1k
R106	S	ERD25FJ472	4.7k
R107	S	ERD25FJ272	2.7k
R108	S	ERD25FJ471	470
R109	S	ERD25TJ104	100k
R201	S	ERD25TJ104	100k
R202	S	ERD25FJ561	560
R203	S	ERD25FJ102	1k
R204	S	ERD25TJ684	680k
R206	S	ERD25FJ102	1k
R301	S	ERD25TJ473	47k
R302	⚠S	ERD25FJ151	150
R303, 304	S	ERD25TJ223	22k
R305	S	ERD25TJ274	270k
R306	S	ERD25TJ153	15k
R307	S	ERD25FJ122	1.2k
R310, 311	S	ERD25FJ332	3.3k
R312, 313	S	ERD25TJ333	33k
R401	S	ERD25FJ182	1.8k
R402	S	ERD25FJ562	5.6k
R403	S	ERD25FJ821	820
R404	S	ERD25FJ331	330
R405	S	ERD25FJ151	150
R406	S	ERD25FJ121	120
R407	S	ERD25FJ100	10
R408	S	ERD25FJ122	1.2k
R501	S	ERD25TJ153	15k
R502	S	ERD25TJ104	100k
R503	S	ERD25TJ563	56k
R504	S	ERD25TJ473	47k
R505	S	ERD25TJ273	27k
R506	S	ERD25TJ154	150k
R507	S	ERD25TJ823	82k
R508, 509	S	ERD25TJ563	56k
R510	S	ERD25FJ103	10k
R511	S	ERD25FJ102	1k
R512	S	ERD25TJ104	100k
R513	S	ERD25FJ103	10k
R514	S	ERD25TJ104	100k
R701	S	ERD25FJ121	120
R702	⚠	ERQ1CJ680	68
R703	S	ERD25FJ122	1.2k
R704	⚠S	ERD25FJ2R2	2.2
R706	S	ERD25FJ472	4.7k
R707	S	ERD25FJ392	3.9k
R709	S	ERD25FJ331	330
R710	S	ERD25TJ473	47k
R711	S	ERD25FJ103	10k
R712	S	ERD25TJ473	47k
R713	S	ERD25FJ471	470
R901	S	ERD25FJ681	680
R902	S	ERD25FJ103	10k
R903	S	ERD25FJ102	1k
R904	S	ERD25FJ562	5.6k
R905	S	ERD25FJ102	1k
R906	S	ERD25FJ561	560
R907	S	ERD25FJ102	1k
R908	S	ERD25FJ682	6.8k
R909	S	ERD25TJ123	12k
R910	S	ERD25FJ682	6.8k
R911	S	ERD25FJ822	8.2k
R912, 913	S	ERD25TJ104	100k
R914	S	ERD25TJ104	100k
R920	S	ERD25TJ684	680k

Ref. No.		Part No.	Value
CAPACITORS			
C1	S	ECEA50Z3R3	3.3
C2, 3	S	ECKD1H103ZF	0.01
C4	S	ECKD1H103ZF	0.01
C101	S	ECKD1H103ZF	0.01
C103	S	ECKD1H103ZF	0.01
C105, 106	S	ECKD1H223ZF	0.022
C107	S	ECKD1H223ZF	0.022
C108	S	ECEA50Z1	1
C109, 110	S	ECEA1HS100	10
C111	S	ECKD1H223ZF	0.022
C112	S	ECCD1H101K	100P
C202	S	ECQM1H473JZ	0.047
C203	S	ECCD1H120KC	12P
C204		ECQP1471JZ	470P
C205	S	ECEA1AS101	100
C206	S	ECEA25Z4R7	4.7
C207	S	ECQM1H183JZ	0.018
C208	S	ECCD1H390K	39P
C209	S	ECKD1H103ZF	0.01
C211	S	ECKD1H223ZF	0.022
C301	S	ECEA1HS100	10
C302	S	ECEA1ES101	100
C303	S	ECQM1H473JZ	0.047
C305		ECQP1471JZ	470P
C306	S	ECEA50Z1	1
C307	S	ECEA50Z3R3	3.3
C308	S	ECEA50ZR47	0.47
C309, 310	S	ECQM1H153JZ	0.015
C311, 312	S	ECEA50ZR47	0.47
C401	S	ECEA50Z3R3	3.3
C501	S	ECEA50Z1	1
C701, 702	S	ECEA1ES471	470
C703	S	ECKD2H681KB	680P
C704	S	ECEA1HS470	47
C705	S	ECKD2H681KB	680P
C706	S	ECEA1HS470	47
C707	S	ECEA1HS221	220
C708	S	ECEA1CS471	470
C709	S	ECKD1H103ZF	0.01
C710	S	ECEA1HS470	47
C901	S	ECEA0JS102	100
C902	S	ECCD1H070CC	7P
C903	S	ECCD1H180KC	18P
C904	S	ECKD1H103ZF	0.01
C906, 907	S	ECKD1H103ZF	0.01
C908	S	ECKD1H103ZF	0.01
C909	S	ECEA50M4R7R	4.7
C911	S	ECKD1H223ZF	0.022
C912	S	ECEA1AS101	100
C913	S	ECEA50Z3R3	3.3
C914, 915		EECW2R3A3R3	3.3F
C917, 918	S	ECKD1H103ZF	0.01

■ EXPLODED VIEWS



■ REPLACEMENT PARTS LIST.....Cabinet & Chassis Parts

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. [K]-marked parts are used for black only, while ○-marked parts are for silver type only.
4. Part other than [K] -and ○-marked are used for both black and silver type.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
6. The "**S**" mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the column of description stand for the quantity preset.

Black type model No. : ST-Z45 (K)

Areas

* [EX] is available in Switzerland and Scandinavia.
* [EH] is available in Holland.
* [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
* [XL] is available in Australia.

Ref. No.		Part No.	Description
CABINET and CHASSIS PARTS			
1	○	SGWTZ45E	Front Panel Ass'y (Silver) (1)
1	[K]	SGWTZ45KE	Front Panel Ass'y (Black) (1)
1–1		SBC449–1	Button, Preset and Selector (1)
1–2	○	SGX7223–3	Ornament (1)
1–2	[K]	SGX7223–6	Ornament (1)
1–3		SBC451–4	Button, Tuning, Memory and Mode (1)
1–4		SBW355–1	Button, Memory (1)
1–5		SGU267	Transparent Cover (1)
1–6	○	SKD4391	Tinted Plate (1)
1–6	[K]	SKD4392	Tinted Plate (1)
1–7	○	SGX7197–2	Front Sub Panel (Silver) (1)
1–7	[K]	SGX7197–3	Front Sub Penal (Black) (1)
2		SBC337–1	Button, Power (1)
3		SHG399–1	Rubber, FL (2)
4		SUW1891	Bracket, FL (1)
5		SUW1893	Bracket, Power Switch (1)
6		SDU89–1	Filter, FL (1)
7		SHR5169–1	Spacer, Switch (1)
8	○	SKCTZ45E	Cabinet Cover (Silver) (1)
8	[K]	SKCTZ45KE	Cabinet Cover (Black) (1)
9		SHR5181	Spacer (1)
10		SGP3110–1	Bracket, AC Cord (1)
10 [XA]		SPG3130	Bracket, AC Cord (1)
11	S⚠	SJA88	AC Cord (1)
11 [XL]	S⚠	QFC1208M	AC Cord (1)
12		SJF8801N	Terminal Board, IN/OUT (1)

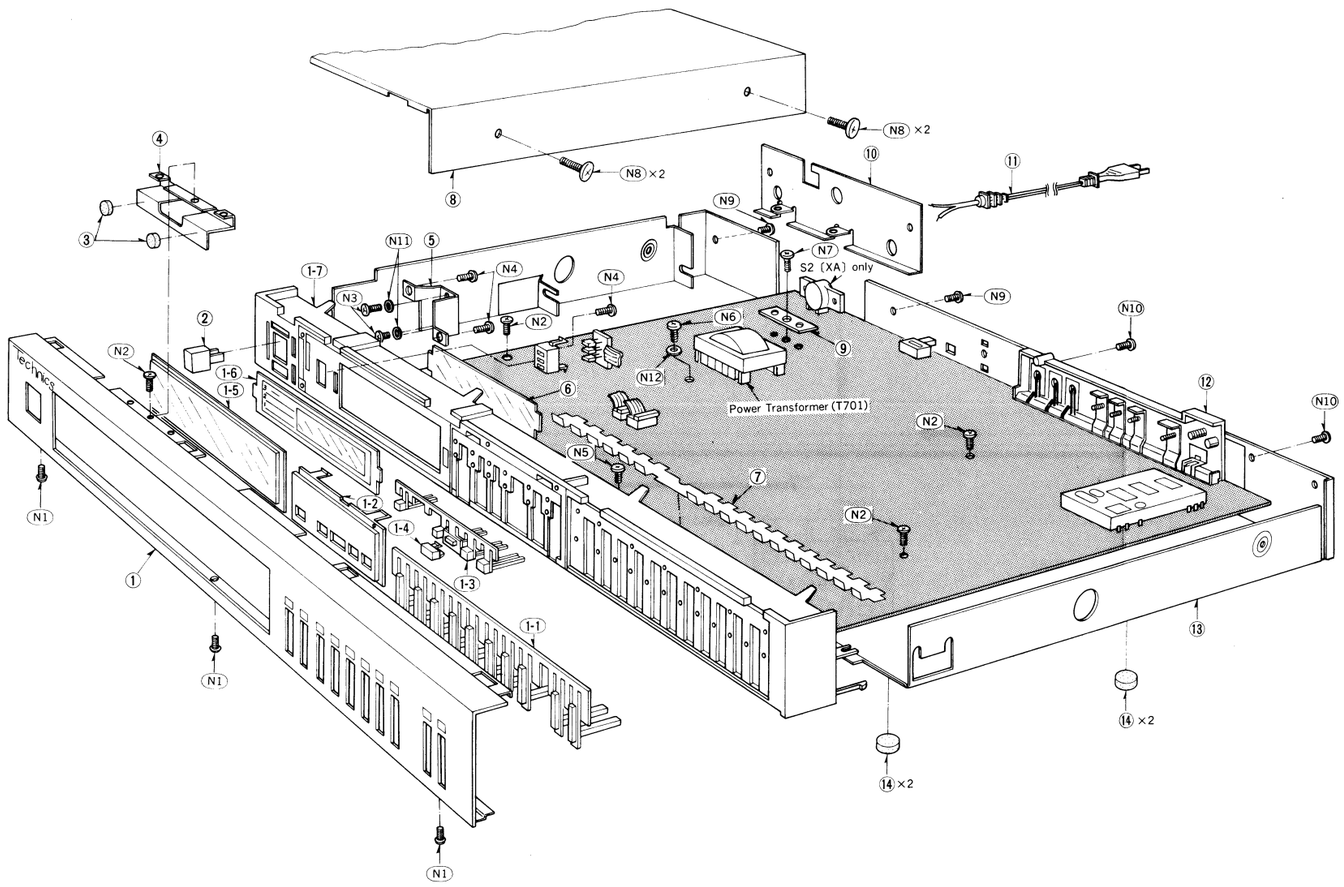
and may differ from

Ω , M = 1000kΩ
F) P = μμF

	Tolerance
	C : ± 0.25pF
	J : ± 5%
	K : ± 10%
	Z : +80%, –20%

alue
68
.2k
2.2
.7k
3.9k
330
47k
10k
47k
470
680
10k
1k
1k
560
1k
3.8k
12k
3.8k
2.2k
00k
00k
80k
47
220
470
0.01
47
100
7P
18P
0.01
0.01
0.01
4.7
.022
100
3.3
3.3F
0.01

■ EXPLODED VIEWS



■ REPLACEMENT PARTS LIST.....Cabinet & Chassis Parts

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Ⓚ-marked parts are used for black only, while ○-marked parts are for silver type only.
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6. The " **S** " mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the column of description stand for the quantity preset.

Black type model No. : ST-Z45 (K)

Areas

* [EX] is available in Switzerland and Scandinavia.
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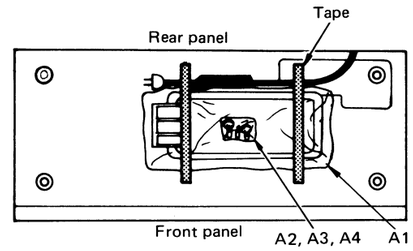
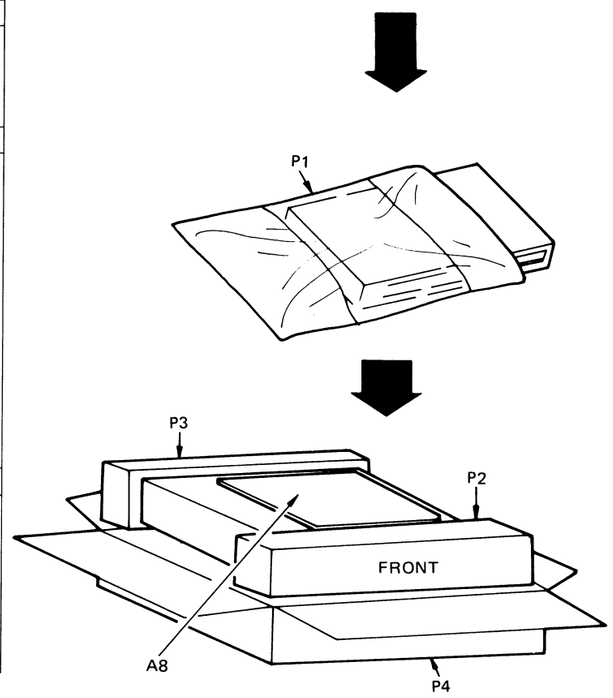
Ref. No.		Part No.	Description	
CABINET and CHASSIS PARTS				
1	○	SGWTZ45E	Front Panel Ass'y (Silver)	(1)
1	Ⓚ	SGWTZ45KE	Front Panel Ass'y (Black)	(1)
1–1		SBC449–1	Button, Preset and Selector	(1)
1–2	○	SGX7223–3	Ornament	(1)
1–2	Ⓚ	SGX7223–6	Ornament	(1)
1–3		SBC451–4	Button, Tuning, Memory and Mode	(1)
1–4		SBW355–1	Button, Memory	(1)
1–5		SGU267	Transparent Cover	(1)
1–6	○	SKD4391	Tinted Plate	(1)
1–6	Ⓚ	SKD4392	Tinted Plate	
1–7	○	SGX7197–2	Front Sub Panel (Silver)	(1)
1–7	Ⓚ	SGX7197–3	Front Sub Penal (Black)	(1)
2		SBC337–1	Button, Power	(1)
3		SHG399–1	Rubber, FL	(2)
4		SUW1891	Bracket, FL	(1)
5		SUW1893	Bracket, Power Switch	(1)
6		SDU89–1	Filter, FL	(1)
7		SHR5169–1	Spacer, Switch	(1)
8	○	SKCTZ45E	Cabinet Cover (Silver)	(1)
8	Ⓚ	SKCTZ45KE	Cabinet Cover (Black)	(1)
9		SHR5181	Spacer	(1)
10		SGP3110–1	Bracket, AC Cord	(1)
10 [XA]		SPG3130	Bracket, AC Cord	(1)
11	**S**⚠	SJA88	AC Cord	(1)
11[XL]	**S**⚠	QFC1208M	AC Cord	(1)
12		SJF8801N	Terminal Board, IN/OUT	(1)
13 [EX]		SGPTZ45E	Rear Panel Ass'y	(1)
13 [EH]		SGPTZ45G	Rear Panel Ass'y	(1)
13 [XA]		SGPTZ45X	Rear Panel Ass'y	(1)
13 [XL]		SGPTZ45L	Rear Panel Ass'y	(1)
14		SKL277	Foot	(4)
SCREWS				
N1	**S**	XTB3+8BFZ	Tapping, ⊕ 3 x 8	(3)
N2		XTBS3+8BFYR1	Tapping with Detent	(4)
N3	**S**	XSN3+6S	⊕ 3 x 6	(2)
N4	**S**	XTB3+8BFZ	Tapping, ⊕ 3 x 8	(3)
N5	**S**	XTB3+8BFN	Tapping, ⊕ 3 x 8	(1)
N6	**S**	XTN3+8BFN	Tapping, ⊕ 3 x 8	(1)
N7	**S**	XTB3+16BFN	Tapping, ⊕ 3 x 16	(1)
N8	○	SNE2095–2	Tapping	(4)
N8	Ⓚ	SNE2095–1	Tapping	(4)
N9	**S**	XTB3+10BFZ	Tapping, ⊕ 3 x 10	(2)
N10	**S**	XTB3+8BFZ	Tapping, ⊕ 3 x 8	(2)
WASHERS				
N11	**S**	XWA3B	Spring, ϕ3	(2)
N12	**S**	XWG3	Plain, ϕ3	(1)
ACCESSORIES				
A1		SSA605–1	Loop Antenna	(1)
A2		SMA231	Holder, Loop Antenna	(1)
A3		SMA233	Holder, Loop Antenna	(1)
A4		XTN3+10AFZ	Screw	(2)
A5		SJP2129–5	Cord, Connection	(1)
A6		SSA267	Cord, Indoor Antenna	(1)
A7 [XA] only	⚠	SJP5213–1	Plug Adaptor, AC	(1)
A8 [EX, EH]		SQF11177	Instructions Book	(1)
A8 [XA]		SQF11291	Instructions Book	(1)
PACKING PARTS				
P1	○	SPP697	Polyethylene Bag (Silver)	(1)
P1	Ⓚ	SPP647	Polyethylene Bag (Black)	(1)
P2		SPS3493	Pad, Front Side	(1)
P3		SPS3495	Pad, Rear Side	(1)
P4	○	SPG3839	Carton Box (Silver)	(1)
P4	Ⓚ	SPG3915	Carton Box (Black)	(1)

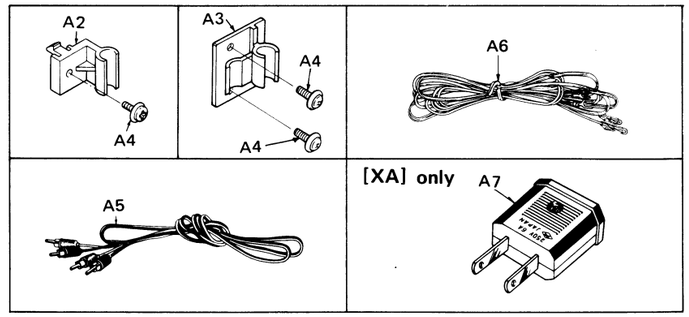
■ PACKINGS



*** Secure the AC cord and prepared loop antenna on the bottom of the set by use of tape.**



• Accessories



Printed in Japan
82034500 Ⓗ SH/TN